

**REMARKS**

After entry of this amendment, claims 1 and 4-22 are pending. The claims have been amended without prejudice or disclaimer. Support for the amendments is found *inter alia* in the original claims. Further support for the amendments to claims 1 and 12 is found in the specification, for example, at page 12, lines 1-10, at page 47, lines 8-20, page 53, lines 5-17, Examples 3 and 4, and Figure 2. Further support for the amendment to claim 16 is found in the specification, for example, at page 11, lines 12-19 and page 12, lines 32-25. No new matter has been added.

**Election/Restrictions**

The Examiner stated that the election for R2 and R3 was “unsaturated C2-C4-alkylcarbonyl.” (See page 2, item 1). Applicants respectfully disagree; the provisional election filed November 2, 2007 was rather to “unsaturated C2-C24-alkylcarbonyl.”

**Claim Objections**

The Examiner objected to claims 15 and 16. In light of the amendments, the objections are believed to be rendered moot. Reconsideration and withdrawal of the objections is respectfully requested.

**Rejections under 35 U.S.C. § 103**

Claims 1 and 4-22 are rejected as being unpatentable under 35 U.S.C. § 103(a) over Knutzon *et al.* (U.S. Patent No. 6,075,183, hereinafter “Knutzon”) in view of Beaudoin *et al.* (hereinafter “Beaudoin”) and Parker-Barnes *et al.* (hereinafter “Parker-Barnes”). Applicants respectfully traverse the rejection.

Applicants respectfully disagree with the Examiner’s characterization of the claims and the references cited. Nonetheless, in order to expedite prosecution, the claims have been amended without prejudice or disclaimer and recite that the nucleic acid sequences are obtained from *Phaeodactylum tricornutum* or *Physcomitrella patens*.

The Examiner bears the initial burden of establishing *prima facie* obviousness. See *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To support a *prima facie* conclusion of obviousness, the prior art must disclose or suggest all the limitations of the claimed invention. See *In re Lowry*, 32 F.3d 1579, 1582, 32 USPQ2d 1031, 1034 (Fed. Cir. 1994).

Knutzon describes methods for preparing poly-unsaturated long chain fatty acids in plants with nucleic acid sequences encoding a  $\Delta 5$ - desaturase,  $\Delta 6$ - desaturase, or  $\Delta 12$ - desaturase, all from *Mortierella alpina* (Knutzon, abstract; col. 7, lines 18-19). Knutzon does not teach or suggest a construct with a  $\Delta 6$ - elongase and does not teach or suggest nucleic acid sequences obtained from *Phaeodactylum tricornutum* or from *Physcomitrella patens* as recited in the present claims. Moreover, Knutzon does not teach or suggest organisms of the genera *Phaeodactylum* or *Physcomitrella* as sources for polypeptides having desaturase activities (Knutzon, col. 6, lines 1-4).

Additionally, the Examiner acknowledges that Knutzon does not teach a nucleic acid encoding a  $\Delta 6$ -elongase or co-transformation with nucleic acids encoding all three of a  $\Delta 6$ -elongase, a  $\Delta 6$ -desaturase and a  $\Delta 5$ - desaturase and relies on Beaudoin and Parker-Barnes for such teaching. Beaudoin and Parker-Barnes however do not remedy this deficiency.

Beaudoin discloses expression in yeast of a  $\Delta 5$ -desaturase from *Mortierella alpina*, a  $\Delta 6$ -desaturase from borage, and an enzyme with elongase activity from *C. elegans* where exogenous substrates were supplied (Beaudoin, Table 3 and p. 6422, left column). Parker-Barnes discloses expression in yeast of a  $\Delta 5$ -desaturase and an elongase subunit both from *Mortierella alpina*, where exogenous substrates were supplied (Parker-Barnes, abstract).

Furthermore, Knutzon teaches expression in a plant of a construct with only one of the desaturases (see Knutzon, Examples 7 and 8). Beaudoin and Parker-Barnes do not remedy this deficiency. Both Beaudoin and Parker-Barnes disclose expression of their specific constructs only in yeast. None of the references cited by the Examiner, even if combined, teach or suggest nucleic acids from *Phaeodactylum tricornutum* or *Physcomitrella patens*, or the specific combination of two desaturases and an elongase from *Phaeodactylum tricornutum* or *Physcomitrella patens* as recited in the present claims. None of the references cited by the

Examiner provides a process for the production of compounds in transgenic plant cells, plants or parts thereof comprising introducing into a plant cell, plant or part thereof a  $\Delta 6$ -desaturase, a  $\Delta 6$ -elongase and a  $\Delta 5$ -desaturase as recited in the present claims. Thus, it is clear that, even if combined, the teachings of Knutzon, Beaudoin and Parker-Barnes do not render the present application *prima facie* obvious because the combined teaching does not disclose or suggest all the limitations of the claimed invention or the specific combination as claimed. Because Knutzon, Beaudoin, and Parker-Barnes, alone or in combination, do not teach all of the claim limitations, a *prima facie* case of obviousness has not been established.

The Examiner also alleges that “it would have been obvious to co-transform a plant with coding sequences for a delta-5 desaturase, a delta-6 desaturase and an elongase, given the teachings of Beaudoin et al. of co-transforming yeast with these three genes and it would be obvious to use any known coding sequences for any of these enzymes, including the delta-6 desaturase taught by Parker-Barnes et al.” (Office Action at page 5).

A statement that modifications of the prior art to meet the claimed invention would have been “well within the ordinary skill of the art at the time the claimed invention was made” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See MPEP § 2143.01 IV. “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) quoting *In re Kahn*, 441 F.3d 977, 988, (Fed. Cir. 2006). Furthermore, the Examiner cannot selectively pick and choose from the disclosed parameters without proper motivation as to a particular selection. The mere fact that a reference may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 (Fed. Cir. 1990); 16 *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992). Thus, it is impermissible to simply engage in a hindsight reconstruction of the claimed invention where the

reference itself provides no teaching as to why the applicant's combination would have been obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

The modifications proposed by the Examiner appear to substitute a construct with one desaturase expressed in a plant with a construct with three enzymes from different organisms expressed in yeast with exogenous substrates being supplied, and to substitute with another enzyme from another different organism expressed in yeast with exogenous substrates, without any explanations or rational for such substitutions. Simply stating that it would be obvious to substitute any known coding sequences lacks the specificity to support a legal conclusion of obviousness. Because the requisite explanation or rational has not been provided, a *prima facie* case of obviousness has not been established for this additional reason.

Even assuming *arguendo* that such substitutions were made, because the references do not teach or suggest all the limitations of the present claims, the resulting construct or process would still not arrive at the process as presently claimed as explained above.

For at least these reasons, reconsideration and withdrawal of the obviousness rejection is respectfully requested for the independent claims and the claims dependent therefrom. See *In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988) (holding that if an independent claim is nonobvious then any claim dependent therefrom is nonobvious).

### CONCLUSION

For at least the above reasons, Applicants respectfully request withdrawal of the rejections and allowance of the claims. If any outstanding issues remain, the Examiner is invited to telephone the undersigned at the number given below.

Accompanying this response is a petition for a two-month extension of time to and including June 29, 2009, pursuant to 37 CFR § 1.7(a), to respond to the Office Action mailed January 28, 2009 with the required fee authorization. No further fee is believed due.

However, if an additional fee is due, the Director is authorized to charge our Deposit Account No. 03-2775, under Order No. 12810-00043-US from which the undersigned is authorized to draw.

Respectfully submitted,

By   
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